

03-01-00 A

Practitioner's Docket No. 473-009270-US(PAR)

PATENT

02/29/00
JC781 U.S. PTO

Preliminary Classification:

Proposed Class:

Subclass:

NOTE: "All applicants are requested to include a preliminary classification on newly filed patent applications. The preliminary classification, preferably class and subclass designations, should be identified in the upper right-hand corner of the letter of transmittal accompanying the application papers, for example 'Proposed Class 2, subclass 129.'" M.P.E.P. § 601, 7th ed.

JC586 U.S. PTO
09/515813 02/29/00

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Box Patent Application
Assistant Commissioner for Patents
Washington, D.C. 20231

NEW APPLICATION TRANSMITTAL

Transmitted herewith for filing is the patent application of

Inventor(s): Thomas HANEBRINK

WARNING: 37 C.F.R. § 1.41(a)(1) points out:

"(a) A patent is applied for in the name or names of the actual inventor or inventors.

"(1) The inventorship of a nonprovisional application is that inventorship set forth in the oath or declaration as prescribed by § 1.63, except as provided for in § 1.53(d)(4) and § 1.63(d). If an oath or declaration as prescribed by § 1.63 is not filed during the pendency of a nonprovisional application, the inventorship is that inventorship set forth in the application papers filed pursuant to § 1.53(b), unless a petition under this paragraph accompanied by the fee set forth in § 1.17(i) is filed supplying or changing the name or names of the inventor or inventors."

For (title): METHOD FOR OUTPUTTING TRAFFIC INFORMATION IN A MOTOR VEHICLE

CERTIFICATION UNDER 37 C.F.R. § 1.10*

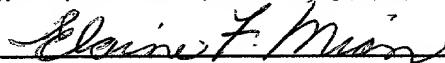
(Express Mail label number is mandatory.)

(Express Mail certification is optional.)

I hereby certify that this New Application Transmittal and the documents referred to as attached therein are being deposited with the United States Postal Service on this date February 29, 2000, in an envelope as "Express Mail Post Office to Addressee," mailing Label Number EL336863403US, addressed to the: Assistant Commissioner for Patents, Washington, D.C. 20231.

Elaine Mian

(type or print name of person mailing paper)



Signature of person mailing paper

WARNING: Certificate of mailing (first class) or facsimile transmission procedures of 37 C.F.R. § 1.8 cannot be used to obtain a date of mailing or transmission for this correspondence.

***WARNING:** Each paper or fee filed by "Express Mail" must have the number of the "Express Mail" mailing label placed thereon prior to mailing. 37 C.F.R. § 1.10(b).

"Since the filing of correspondence under § 1.10 without the Express Mail mailing label thereon is an oversight that can be avoided by the exercise of reasonable care, requests for waiver of this requirement will not be granted on petition." Notice of Oct. 24, 1996, 60 Fed. Reg. 56,439, at 56,442.

(New Application Transmittal [4-1]—page 1 of 11)

1. Type of Application

This new application is for a(n)

(check one applicable item below)

- Original (nonprovisional)
- Design
- Plant

WARNING: *Do not use this transmittal for a completion in the U.S. of an International Application under 35 U.S.C. § 371(c)(4), unless the International Application is being filed as a divisional, continuation or continuation-in-part application.*

WARNING: *Do not use this transmittal for the filing of a provisional application.*

NOTE: *If one of the following 3 items apply, then complete and attach ADDED PAGES FOR NEW APPLICATION TRANSMITTAL WHERE BENEFIT OF A PRIOR U.S. APPLICATION CLAIMED and a NOTIFICATION IN PARENT APPLICATION OF THE FILING OF THIS CONTINUATION APPLICATION.*

- Divisional.
- Continuation.
- Continuation-in-part (C-I-P).

2. Benefit of Prior U.S. Application(s) (35 U.S.C. §§ 119(e), 120, or 121)

NOTE: *A nonprovisional application may claim an invention disclosed in one or more prior filed copending nonprovisional applications or copending international applications designating the United States of America. In order for a nonprovisional application to claim the benefit of a prior filed copending nonprovisional application or copending international application designating the United States of America, each prior application must name as an inventor at least one inventor named in the later filed nonprovisional application and disclose the named inventor's invention claimed in at least one claim of the later filed nonprovisional application in the manner provided by the first paragraph of 35 U.S.C. § 112. Each prior application must also be:*

- (i) An international application entitled to a filing date in accordance with PCT Article 11 and designating the United States of America; or*
- (ii) Complete as set forth in § 1.51(b); or*
- (iii) Entitled to a filing date as set forth in § 1.53(b) or § 1.53(d) and include the basic filing fee set forth in § 1.16; or*
- (iv) Entitled to a filing date as set forth in § 1.53(b) and have paid therein the processing and retention fee set forth in § 1.21(l) within the time period set forth in § 1.53(f).*

37 C.F.R. § 1.78(a)(1).

NOTE: *If the new application being transmitted is a divisional, continuation or a continuation-in-part of a parent case, or where the parent case is an International Application which designated the U.S., or benefit of a prior provisional application is claimed, then check the following item and complete and attach ADDED PAGES FOR NEW APPLICATION TRANSMITTAL WHERE BENEFIT OF PRIOR U.S. APPLICATION(S) CLAIMED.*

WARNING: *If an application claims the benefit of the filing date of an earlier filed application under 35 U.S.C. §§ 120, 121 or 365(c), the 20-year term of that application will be based upon the filing date of the earliest U.S. application that the application makes reference to under 35 U.S.C. §§ 120, 121 or 365(c). (35 U.S.C. § 154(a)(2) does not take into account, for the determination of the patent term, any application on which priority is claimed under 35 U.S.C. §§ 119, 365(a) or 365(b).) For a c-i-p application, applicant should review whether any claim in the patent that will issue is supported by an earlier application and, if not, the applicant should consider canceling the reference to the earlier filed application. The term of a patent is not based on a claim-by-claim approach. See Notice of April 14, 1995, 60 Fed. Reg. 20,195, at 20,205.*

WARNING: When the last day of pendency of a provisional application falls on a Saturday, Sunday, or Federal holiday within the District of Columbia, any nonprovisional application claiming benefit of the provisional application must be filed prior to the Saturday, Sunday, or Federal holiday within the District of Columbia. See 37 C.F.R. § 1.78(a)(3).

The new application being transmitted claims the benefit of prior U.S. application(s). Enclosed are ADDED PAGES FOR NEW APPLICATION TRANSMITTAL WHERE BENEFIT OF PRIOR U.S. APPLICATION(S) CLAIMED.

3. Papers Enclosed

A. Required for filing date under 37 C.F.R. § 1.53(b) (Regular) or 37 C.F.R. § 1.153 (Design) Application

14 Pages of specification

3 Pages of claims

4 Sheets of drawing

WARNING: DO NOT submit original drawings. A high quality copy of the drawings should be supplied when filing a patent application. The drawings that are submitted to the Office must be on strong, white, smooth, and non-shiny paper and meet the standards according to § 1.84. If corrections to the drawings are necessary, they should be made to the original drawing and a high-quality copy of the corrected original drawing then submitted to the Office. Only one copy is required or desired. For comments on proposed then-new 37 C.F.R. § 1.84, see Notice of March 9, 1988 (1990 O.G. 57-62).

NOTE: "Identifying indicia, if provided, should include the application number or the title of the invention, inventor's name, docket number (if any), and the name and telephone number of a person to call if the Office is unable to match the drawings to the proper application. This information should be placed on the back of each sheet of drawing a minimum distance of 1.5 cm. (5/8 inch) down from the top of the page . . ." 37 C.F.R. § 1.84(c)).

(complete the following, if applicable)

The enclosed drawing(s) are photograph(s), and there is also attached a "PETITION TO ACCEPT PHOTOGRAPH(S) AS DRAWING(S)." 37 C.F.R. § 1.84(b).

formal

informal

B. Other Papers Enclosed

 Pages of declaration and power of attorney

1 Pages of abstract

1 Other Title Page

4. Additional papers enclosed

Amendment to claims

Cancel in this applications claims _____ before calculating the filing fee. (At least one original independent claim must be retained for filing purposes.)

Add the claims shown on the attached amendment. (Claims added have been numbered consecutively following the highest numbered original claims.)

Preliminary Amendment

Information Disclosure Statement (37 C.F.R. § 1.98)

Form PTO-1449 (PTO/SB/08A and 08B)

Citations

- Declaration of Biological Deposit
- Submission of "Sequence Listing," computer readable copy and/or amendment pertaining thereto for biotechnology invention containing nucleotide and/or amino acid sequence.
- Authorization of Attorney(s) to Accept and Follow Instructions from Representative
- Special Comments
- Other

5. Declaration or oath (including power of attorney)

NOTE: A newly executed declaration is not required in a continuation or divisional application provided that the prior nonprovisional application contained a declaration as required, the application being filed is by all or fewer than all the inventors named in the prior application, there is no new matter in the application being filed, and a copy of the executed declaration filed in the prior application (showing the signature or an indication thereon that it was signed) is submitted. The copy must be accompanied by a statement requesting deletion of the names of person(s) who are not inventors of the application being filed. If the declaration in the prior application was filed under § 1.47, then a copy of that declaration must be filed accompanied by a copy of the decision granting § 1.47 status or, if a nonsigning person under § 1.47 has subsequently joined in a prior application, then a copy of the subsequently executed declaration must be filed. See 37 C.F.R. §§ 1.63(d)(1)-(3).

NOTE: A declaration filed to complete an application must be executed, identify the specification to which it is directed, identify each inventor by full name including family name and at least one given name, without abbreviation together with any other given name or initial, and the residence, post office address and country or citizenship of each inventor, and state whether the inventor is a sole or joint inventor. 37 C.F.R. § 1.63(a)(1)-(4).

- Enclosed

Executed by

(check all applicable boxes)

- inventor(s).
- legal representative of inventor(s).
37 C.F.R. §§ 1.42 or 1.43.
- joint inventor or person showing a proprietary interest on behalf of inventor who refused to sign or cannot be reached.
 - This is the petition required by 37 C.F.R. § 1.47 and the statement required by 37 C.F.R. § 1.47 is also attached. See item 13 below for fee.

- Not Enclosed.

NOTE: Where the filing is a completion in the U.S. of an International Application or where the completion of the U.S. application contains subject matter in addition to the International Application, the application may be treated as a continuation or continuation-in-part, as the case may be, utilizing ADDED PAGE FOR NEW APPLICATION TRANSMITTAL WHERE BENEFIT OF PRIOR U.S. APPLICATION CLAIMED.

- Application is made by a person authorized under 37 C.F.R. § 1.41(c) on behalf of all the above named inventor(s).

(The declaration or oath, along with the surcharge required by 37 C.F.R. § 1.16(e) can be filed subsequently).

- Showing that the filing is authorized.
(not required unless called into question. 37 C.F.R. § 1.41(d))

6. Inventorship Statement

WARNING: If the named inventors are each not the inventors of all the claims an explanation, including the ownership of the various claims at the time the last claimed invention was made, should be submitted.

The inventorship for all the claims in this application are:

The same.

or

Not the same. An explanation, including the ownership of the various claims at the time the last claimed invention was made,

is submitted.

will be submitted.

7. Language

NOTE: An application including a signed oath or declaration may be filed in a language other than English. An English translation of the non-English language application and the processing fee of \$130.00 required by 37 C.F.R. § 1.17(k) is required to be filed with the application, or within such time as may be set by the Office. 37 C.F.R. § 1.52(d).

English

Non-English

The attached translation includes a statement that the translation is accurate. 37 C.F.R. § 1.52(d).

8. Assignment

An assignment of the invention to Nokia Mobile Phones Ltd.

is attached. A separate "COVER SHEET FOR ASSIGNMENT (DOCUMENT) ACCOMPANYING NEW PATENT APPLICATION" or FORM PTO 1595 is also attached.

will follow.

NOTE: "If an assignment is submitted with a new application, send two separate letters-one for the application and one for the assignment." Notice of May 4, 1990 (1114 O.G. 77-78).

WARNING: A newly executed "CERTIFICATE UNDER 37 C.F.R. § 3.73(b)" must be filed when a continuation-in-part application is filed by an assignee. Notice of April 30, 1993, 1150 O.G. 62-64.

(New Application Transmittal [4-1]—page 5 of 11)

11. Small Entity Statement(s)

Statement(s) that this is a filing by a small entity under 37 C.F.R. § 1.9 and 1.27 is (are) attached.

WARNING: "Status as a small entity must be specifically established in each application or patent in which the status is available and desired. Status as a small entity in one application or patent does not affect any other application or patent, including applications or patents which are directly or indirectly dependent upon the application or patent in which the status has been established. The refiling of an application under § 1.53 as a continuation, division, or continuation-in-part (including a continued prosecution application under § 1.53(d)), or the filing of a reissue application requires a new determination as to continued entitlement to small entity status for the continuing or reissue application. A nonprovisional application claiming benefit under 35 U.S.C. § 119(e), 120, 121, or 365(c) of a prior application, or a reissue application may rely on a statement filed in the prior application or in the patent if the nonprovisional application or the reissue application includes a reference to the statement in the prior application or in the patent or includes a copy of the statement in the prior application or in the patent and status as a small entity is still proper and desired. The payment of the small entity basic statutory filing fee will be treated as such a reference for purposes of this section." 37 C.F.R. § 1.28(a)(2).

WARNING: "Small entity status must not be established when the person or persons signing the . . . statement can unequivocally make the required self-certification." M.P.E.P., § 509.03, 6th ed., rev. 2, July 1996 (emphasis added).

(complete the following, if applicable)

Status as a small entity was claimed in prior application

_____ / _____, filed on _____, from which benefit is being claimed for this application under:

35 U.S.C. § 119(e),
 120,
 121,
 365(c),

and which status as a small entity is still proper and desired.

A copy of the statement in the prior application is included.

Filing Fee Calculation (50% of A, B or C above)

\$_____

NOTE: Any excess of the full fee paid will be refunded if small entity status is established and a refund request are filed within 2 months of the date of timely payment of a full fee. The two-month period is not extendable under § 1.136. 37 C.F.R. § 1.28(a).

12. Request for International-Type Search (37 C.F.R. § 1.104(d))

(complete, if applicable)

Please prepare an international-type search report for this application at the time when national examination on the merits takes place.

13. Fee Payment Being Made at This Time

Not Enclosed

No filing fee is to be paid at this time.

(This and the surcharge required by 37 C.F.R. § 1.16(e) can be paid subsequently.)

Enclosed

Filing fee \$ 690.00

Recording assignment

(\$40.00; 37 C.F.R. § 1.21(h))

*(See attached "COVER SHEET FOR
ASSIGNMENT ACCOMPANYING NEW
APPLICATION".)*

\$ _____

Petition fee for filing by other than all the inventors or person on behalf of the inventor where inventor refused to sign or cannot be reached

(\$130.00; 37 C.F.R. §§ 1.47 and 1.17(l))

\$ _____

For processing an application with a specification in

a non-English language

(\$130.00; 37 C.F.R. §§ 1.52(d) and 1.17(k))

\$ _____

Processing and retention fee

(\$130.00; 37 C.F.R. §§ 1.53(d) and 1.21(l))

\$ _____

Fee for international-type search report

(\$40.00; 37 C.F.R. § 1.21(e))

\$ _____

NOTE: 37 C.F.R. § 1.21(l) establishes a fee for processing and retaining any application that is abandoned for failing to complete the application pursuant to 37 C.F.R. § 1.53(f) and this, as well as the changes to 37 C.F.R. §§ 1.53 and 1.78(a)(1), indicate that in order to obtain the benefit of a prior U.S. application, either the basic filing fee must be paid, or the processing and retention fee of § 1.21(l) must be paid, within 1 year from notification under § 53(f).

Total fees enclosed

\$ 690.00

14. Method of Payment of Fees

Check in the amount of \$ 690.00

Charge Account No. _____ in the amount of
\$ _____

A duplicate of this transmittal is attached.

NOTE: Fees should be itemized in such a manner that it is clear for which purpose the fees are paid. 37 C.F.R. § 1.22(b).

15. Authorization to Charge Additional Fees

WARNING: If no fees are to be paid on filing, the following items should not be completed.

WARNING: Accurately count claims, especially multiple dependent claims, to avoid unexpected high charges, if extra claim charges are authorized.

The Commissioner is hereby authorized to charge the following additional fees by this paper and during the entire pendency of this application to Account No. 16-1350:

37 C.F.R. § 1.16(a), (l) or (g) (filing fees)
 37 C.F.R. § 1.16(b), (c) and (d) (presentation of extra claims)

NOTE: Because additional fees for excess or multiple dependent claims not paid on filing or on later presentation must only be paid on these claims cancelled by amendment prior to the expiration of the time period set for response by the PTO in any notice of fee deficiency (37 C.F.R. § 1.16(d)), it might be best not to authorize the PTO to charge additional claim fees, except possibly when dealing with amendments after final action.

37 C.F.R. § 1.16(e) (surcharge for filing the basic filing fee and/or declaration on a date later than the filing date of the application)
 37 C.F.R. § 1.17(a)(1)–(5) (extension fees pursuant to § 1.136(a)).
 37 C.F.R. § 1.17 (application processing fees)

NOTE: ". . . A written request may be submitted in an application that is an authorization to treat any concurrent or future reply, requiring a petition for an extension of time under this paragraph for its timely submission, as incorporating a petition for extension of time for the appropriate length of time. An authorization to charge all required fees, fees under § 1.17, or all required extension of time fees will be treated as a constructive petition for an extension of time in any concurrent or future reply requiring a petition for an extension of time under this paragraph for its timely submission. Submission of the fee set forth in § 1.17(a) will also be treated as a constructive petition for an extension of time in any concurrent reply requiring a petition for an extension of time under this paragraph for its timely submission." 37 C.F.R. § 1.136(a)(3).

37 C.F.R. § 1.18 (issue fee at or before mailing of Notice of Allowance, pursuant to 37 C.F.R. § 1.311(b))

NOTE: Where an authorization to charge the issue fee to a deposit account has been filed before the mailing of a Notice of Allowance, the issue fee will be automatically charged to the deposit account at the time of mailing the notice of allowance. 37 C.F.R. § 1.311(b).

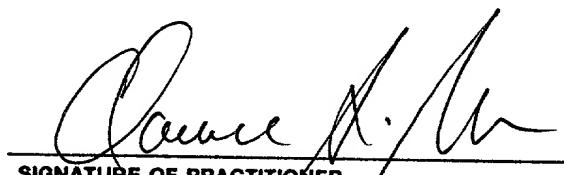
NOTE: 37 C.F.R. § 1.28(b) requires "Notification of any change in status resulting in loss of entitlement to small entity status must be filed in the application . . . prior to paying, or at the time of paying, . . . the issue fee. . ." From the wording of 37 C.F.R. § 1.28(b), (a) notification of change of status must be made even if the fee is paid as "other than a small entity" and (b) no notification is required if the change is to another small entity.

16. Instructions as to Overpayment

NOTE: ". . . Amounts of twenty-five dollars or less will not be returned unless specifically requested within a reasonable time, nor will the payer be notified of such amounts; amounts over twenty-five dollars may be returned by check or, if requested, by credit to a deposit account." 37 C.F.R. § 1.26(a).

Credit Account No. 16-1350
 Refund

SEND ALL CORRESPONDENCE TO:



SIGNATURE OF PRACTITIONER

Clarence A. Green

(type or print name of attorney)

PERMAN & GREEN, LLP

P.O. Address

425 Post Road, Fairfield, Connecticut 06430

Reg. No. 24,622

Tel. No. (203) 259-1800

Customer No.

Incorporation by reference of added pages

(check the following item if the application in this transmittal claims the benefit of prior U.S. application(s) (including an international application entering the U.S. stage as a continuation, divisional or C-I-P application) and complete and attach the ADDED PAGES FOR NEW APPLICATION TRANSMITTAL WHERE BENEFIT OF PRIOR U.S. APPLICATION(S) CLAIMED)

Plus Added Pages for New Application Transmittal Where Benefit of Prior U.S. Application(s) Claimed

Number of pages added _____

Plus Added Pages for Papers Referred to in Item 4 Above

Number of pages added _____

Plus added pages deleting names of inventor(s) named in prior application(s) who is/are no longer inventor(s) of the subject matter claimed in this application.

Number of pages added _____

Plus "Assignment Cover Letter Accompanying New Application"

Number of pages added _____

Statement Where No Further Pages Added

(if no further pages form a part of this Transmittal, then end this Transmittal with this page and check the following item)

This transmittal ends with this page.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Express Mail No.: EL336863403US

In re Application of: Thomas HANEBRINK

SERIAL NUMBER:

EXAMINER:

FILING DATE: Herewith

ART UNIT:

TITLE: METHOD FOR OUTPUTTING TRAFFIC INFORMATION IN A MOTOR VEHICLE

ATTORNEY DOCKET NO.: 473-009270-US(PAR)

The Commissioner of Patents and Trademarks

Washington, D.C. 20231

PRELIMINARY AMENDMENT

Dear Sir:

Please amend the above-identified, enclosed patent application as follows:

IN THE CLAIMS:

Please amend Claims 5, 8, 10 and 13 as shown below.

Claim 5, line 1, delete "one of Claims 1 to 4" and insert --Claim 1--.

Claim 8, lines 1 and 2, delete "one of the preceding claims" and insert --Claim 1--.

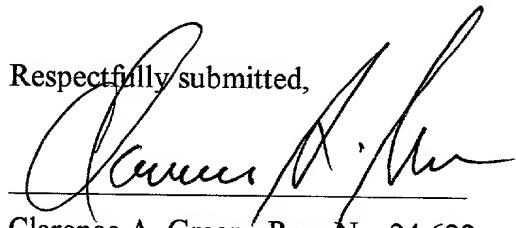
Claim 10, lines 1 and 2, delete "one of the preceding claims" and insert --Claim 1--.

Claim 13, lines 1 and 2, delete "one of the preceding claims" and insert --Claim 1--.

REMARKS

Please enter this preliminary amendment prior to calculation of the fees.

Respectfully submitted,



Clarence A. Green, Reg. No. 24,622

Perman & Green, LLP

425 Post Road

Fairfield, CT 06430

(203) 259-1800

29 Feb. 00

Date

Express mail #
EL33686340345

Method for outputting traffic information in a motor vehicle

Description

The invention relates to a method for outputting traffic information in a motor vehicle.

5 It has already been known for some time to output traffic messages via radio transmitters so that the drivers of motor vehicles can listen to these traffic messages using a radio receiver in the vehicle. The individual radio transmitters supply essentially
10 only traffic messages which relate to the relevant transmission area. Furthermore, the traffic messages are usually sorted in such a way that they are output according to the importance of the respective roads in question. Traffic messages relating to motorways are
15 therefore usually broadcast before such messages relating to trunk roads and towns.

If, as is the case in conurbation areas, there are very large numbers of messages, the driver of a vehicle has to pay careful attention to the traffic
20 messages as they are received, in order to determine whether there are traffic messages which are relevant to him. This can be extremely disruptive and distract the driver from the current events on the road. On the other hand, it is frequently the case here that the
25 driver pays careful attention to the individual traffic messages, but at the decisive moment is disrupted by the current events on the road which, for reasons of safety, have priority for the driver's attention, with the result that he in fact fails to hear the traffic
30 message which is of interest to him.

In addition to this traffic information system which uses public and private radio transmitters, further traffic information systems which permit a user, that is to say for example a driver of a motor
35 vehicle, to request traffic information on a specific basis are already known.

In such a known traffic information system, the driver of a motor vehicle can communicate the

geographic area for which he wishes to have traffic information to a terminal installed in the motor vehicle, before he begins a journey. To do this he has to enter appropriate information into the terminal, for instance the fact that the driver in future wishes to move within a town or intends, for example, to aim for a more distant destination on an overland route or a motorway. In the former case, only traffic information which relates to a circular region with a predetermined radius around the motor vehicle is displayed or communicated to the driver. The driver can also determine the magnitude of the radius. In contrast, in the latter case, the driver is only provided with traffic information which applies to a predefined region around the motor vehicle and to that region in which the motor vehicle is moving in the direction of the destination. In the second case, the region for which relevant traffic information is obtained is, as it were, in the form of a keyhole. Here too, radii and distances can be freely selected by the driver before he begins his journey, or can be predefined by the system.

Although in this traffic information system the number of traffic messages is reduced by the specific geographic limitation of the region for which traffic messages are output, the user who is interested in traffic information has to listen to all the traffic messages in order to determine whether there are traffic messages which are relevant to him.

On this basis, the invention is based on the object of making available a method for outputting traffic information in a motor vehicle, which makes it possible to output the traffic messages on a specific basis in such a way that the interested user is informed as quickly as possible of the traffic situation which is important for him.

This object is achieved by means of the method according to Claim 1. Advantageous refinements of the invention are described in the subclaims.

According to the invention, traffic information
5 is therefore stored together with the respective position of the route section or point to which it relates. Before the traffic information is output, the positions of the traffic messages are then compared with the respective position of the motor vehicle in
10 which the traffic messages are to be output, in order to determine the distances between the respective positions in the traffic messages and the position of this motor vehicle. The traffic messages are subsequently sorted according to distances and output
15 starting with the smallest distance. The first traffic message which is announced or displayed to the driver using the method according to the invention is therefore the traffic message which is closest to the current position of the motor vehicle. Depending on the
20 type of traffic message, the driver can thus decide immediately to what extent the announced traffic situation or the announced route status directly influences his route planning, so that, if appropriate, he can still in good time select an alternative route
25 instead of the planned route.

According to a first exemplary embodiment of the invention, there is provision for the sorted traffic messages to be transmitted to a motor vehicle. Here, the traffic messages are therefore already sorted
30 by the service provider, that is to say the operator of the traffic information system, so that the terminal in the motor vehicle for outputting the traffic information can be of extremely simple design.

However, in another advantageous development of
35 the invention, there is provision for the traffic messages to be transmitted to a motor vehicle, sorted there and stored, the traffic messages which are

transmitted to a motor vehicle being continuously updated at predefinable time intervals.

This permits the driver of a motor vehicle to have up-to-date traffic information announced or 5 displayed to him at any time, this traffic information being output as a function of the current location.

In an advantageous development of the invention there is provision for only traffic messages which relate to a selected area to be stored and are 10 subsequently output in the motor vehicle. This allows the number of traffic messages to be stored to be significantly reduced, with the result that, on the one hand, the memory requirements in the terminal are kept relatively small and, on the other hand, the sorting 15 time before outputting can be reduced.

Although it is possible for the selection of the traffic information which is to be transmitted to be made by the service provider in accordance with the area which is relevant for the respective vehicle, this 20 selection can also be carried out in the motor vehicle by means of an appropriate filter routine, directly after reception of the traffic information.

If a driver generally only drives within a specific area with his motor vehicle, for example as a 25 taxi driver or a supplier, it is expedient if the selected area surrounds the position of the motor vehicle in an essentially circular shape. However, if a route is planned for a journey to a distant destination, for example on an overload route, it is 30 expedient if the selected area can be defined with respect to the particular current position of the motor vehicle as a function of a planned route for a journey, surrounding it in a corridor-like fashion.

In order to prevent the traffic messages which 35 are not relevant to the driver being announced or displayed to him, according to an advantageous development of the invention there is provision for each traffic message to be transmitted together with an

item of updating information which describes the anticipated duration of the general relevance of the respective traffic information, for the average vehicle speed to be detected, logically linked to the distances
5 assigned to the traffic messages and compared with the updating information in order to detect the specific relevance of the respective traffic message, and for only traffic messages which have already been assessed relevant to the respective vehicle in terms of timing
10 to be output.

This makes it possible to prevent, for example, a report of traffic congestion being announced to the driver of a vehicle if said announcement relates to a route section of his planned route but is likely to be
15 long out of date when he reaches this route section. If it is therefore, for example, possible to expect that congestion which is, for example, 200 km away on the planned route will have cleared, for example, in an hour the driver of a vehicle which is travelling
20 100 km/h on average does not need to have this congestion announced to him because the vehicle will not reach this section of the route until two hours later, that is to say when the traffic message no longer applies.
25

In this context, it is particularly expedient if the updating information of the respective traffic message contains the transmission time, the anticipated duration and the detection time of the reported event.

In one advantageous refinement of the invention
30 there is provision for first the direction of travel of the motor vehicle to be detected, for the direction of the motor vehicle with respect to the particular position of the traffic message to be detected and to be compared with the direction of travel, and for the
35 traffic messages to be output sorted according to directions. In this way it is possible to ensure that two or more traffic messages which relate to traffic events which are at equal distances from the current

position of the motor vehicle can be output sorted once more according to their instantaneous direction-dependent relevance for the driver. A traffic event which occurs near to a putative route is not 5 output in such a case until after the announcement or display of the traffic event which has occurred at a place directly in front of the vehicle.

Here, it is also possible to determine by means of the direction in which the position of the traffic 10 message, that is to say the location of the traffic event which is to be reported lies viewed from the instantaneous position of the vehicle whether the traffic message relates to the respective road in the direction of travel or the carriageway or carriageways 15 in the opposite direction in order to avoid traffic messages relating to the opposite direction being announced or displayed.

One advantageous refinement to the invention is characterized by the fact that a directional factor is 20 formed for each traffic message from the direction of the motor vehicle with respect to the particular position of the traffic message and the direction of travel, which factor is combined with the distance assigned to the respective traffic message to form a 25 local relevance factor which is taken into account during the outputting of the traffic messages, a traffic message being preferably output only if its local relevance factor is higher than a predefinable threshold value.

Another advantageous refinement of the invention is characterized in that the position of the motor vehicle is determined as a Geocode using a satellite-supported position-determining system, in particular with the GPS (Global Positioning System), 35 and in that the positions of the traffic messages are also provided as Geocodes, with the result that the distances can be determined without further conversion calculations. By using Geocodes, it is possible to

determine particularly easily both the distances between the vehicle and route sections affected by the traffic messages, the direction of travel and the directions of the vehicle with respect to the route
5 distances.

The invention is explained in more detail below, by way of example, with reference to the drawing, in which:

10 Figure 1 shows a simplified, diagrammatic view of a user unit for use as a terminal in a traffic information system,

Figure 2 shows a flowchart of a filter routine which is used in the method according to the invention,

15 Figure 3 shows a flowchart of a first exemplary embodiment of the method according to the invention, and

Figure 4 shows a flowchart of another exemplary embodiment of the method according to the invention.

20 Components and method steps which correspond to one another are provided with the same reference symbols in the different figures of the drawing.

As is shown in Figure 1, a user unit which can be used as a terminal in a traffic information service system has a central processing and control unit 10 which is embodied, for example, as a microprocessor μ P and to which a mobile phone 11 is connected as telecommunication unit for communication with a control centre of a road or traffic information service system, and to which, for example, a GPS module 12 is connected
25 as a position-finding module of a satellite-supported position-determining system. To operate the user unit, an input unit 13 is provided which may be, for example, a voice input unit, a complete alphanumeric keyboard, a keypad, such as is used also in telephones, in particular in mobile phones, or in the simplest case a lock-down rotary actuator. It is also possible, instead of a separate input unit 13, to use the keypad of the
30
35

mobile phone 11 or a voice input unit which is provided in the mobile phone 11.

In order to display system acknowledgements while the user unit is being operated, and in particular while the communication with the control centre of the information service system is being prepared, and in order to display information which is transmitted by the information service system to the user unit and information which is stored there, a display unit 14 and/or a voice output unit 15 are expediently connected to the central processing and control unit 10. The display unit 14 may be a screen embodied, for example, as a liquid crystal display here.

15 A storage unit 16 is used for the temporary or permanent storage of traffic information and other data.

The method according to the invention is explained in more detail below, by way of example, with reference to the flowcharts illustrated in the drawing. When the user unit is operating, the user, that is to say in particular the driver of a motor vehicle is provided not only with a multiplicity of further operating functions (not illustrated in more detail) by means of a "traffic information" menu item but also has the possibility of requesting current traffic information and having it displayed and/or announced depending on the features of the terminal.

Depending on the way in which the traffic information service system is configured, the user has the possibility, by means of the user unit, of transmitting in a suitable dialogue a traffic information request together with the instantaneous motor vehicle position, which has been determined by the GPS module 12, to the service provider, that is to say to the control centre of the information service system. At the service-provider end, the traffic messages which are stored together with the respective

position of the route section or route point, that is to say together with the location at which a traffic event which is to be reported is located, are sorted as a function of distance, in that the positions of the 5 traffic messages are initially compared with the respective position of the motor vehicle, in order to determine the distances from them. As soon as the sorting process has been terminated, the traffic information with the traffic messages which are stored 10 according to distances can then be transmitted by the service provider to the user unit and output there in a suitable way.

However, it is preferable if only the traffic messages together with the respective position of the 15 route section to which they relate are transmitted by the control centre of the information service system in response to a traffic information request by a user.

In order to keep the number of traffic messages which are to be stored and output later as small as 20 possible, after traffic information is received in step S10 and the traffic messages are buffered in step S11 a filter routine shown in Figure 2 is initially used to read the traffic messages individually in step S12 in order to determine in step S13 whether or not the 25 position of the traffic message, that is to say the position of the route section to which the traffic message relates, lies in an area which can be determined in advance by the user. If the relevant route section does not lie in the predetermined area, 30 the routine returns to step S12 in order to read the next traffic message, after checking in step S15 whether all the buffered traffic messages have been read.

However, if the traffic message which is read 35 in step S12 lies in the area, the traffic message is stored in step S14. In step S15, it is then checked whether all the traffic messages have been read. If this is the case, the filter routine is terminated.

Otherwise, the routine continues reading traffic messages in step S12 until all the traffic messages have been read.

The area which is selected for the selection of
5 the traffic messages which are of interest for the user
is either an essentially circular area whose radius is
expeditiously predefined by the system if the user does
not input an appropriate value for it. For
10 destination-oriented journeys, in particular for
overland journeys, it is expedient if a keyhole-like
area is defined which comprises an essentially circular
section with a relatively small radius around the
instantaneous position of the vehicle and a conical
15 area lying in the direction of the destination on both
sides of the presumed route.

If the user is also provided with a navigation
system in his user unit and if there is route planning
to the desired destination, the area of interest can
also be selected in a corridor-like fashion along the
20 route, in which case the width of the corridor can
either be freely selected by the driver or can
expeditiously be defined by the system.

As soon as all the traffic messages relating to
the selected area have been stored using the filter
25 routine, the individual traffic messages are output in
accordance with the output routine illustrated in
Figure 3.

For this purpose, firstly the current position
of the vehicle is determined in step S20 before the
30 traffic messages are announced or displayed. As soon as
a traffic message has subsequently been read in step
S21, the distance between the position of the vehicle
and the position of the route section which is affected
by the traffic message is subsequently calculated in
35 step S22. Then, in the simplest case, in step S23 the
traffic message is stored together with the calculated
distance. Then, in step S24 it is checked whether all
the stored traffic messages have been read, and the

routine is continued in step S21 until the distance from the route section for each traffic message has been calculated. After the traffic messages have been sorted, in step S25, as a function of the distances assigned to them, in step S26 the traffic messages are then output starting with the smallest distance.

So that, in this process, the individual traffic events, for example congestion and obstructions, and route information, such as road closures, diversions and road conditions due to the weather, are announced or displayed to the driver not only in the order in which the user is confronted with them but also to present the user with only the traffic messages which are actually relevant to him, it is possible, in the routine illustrated in Figure 3, for the specific relevance of the traffic message to be determined in step S221, after the distance calculation in step S22.

For this purpose, it is calculated, for example, from the distance determined in step S22 and an average vehicle speed, when the user will reach with his vehicle the route section which is affected by the traffic message. This time is compared with an item of updating information which is added to each traffic message and from which the predicted end of the traffic problem which is to be reported can be determined. This predicted end of the traffic problem can be specified relatively precisely, for example in the case of road closures or obstructions as a result of roadworks. In the case of obstructions as a result of traffic accidents, the end can often also be estimated by taking into account the time of the accident and the severity of the accident.

By comparing the time at which the user is predicted to reach, with his vehicle, the corresponding route section with the end time of the obstruction, it is possible to determine the specific relevance of the traffic message for the respective user. In step S222,

it is then checked, using the specific relevance determined, whether or not the specific traffic message is relevant, and whether or not it should be stored, together with the distance, in step S23. In the latter 5 case, the routine returns to step S21 in order to read the next traffic message after it has been checked in step S24 whether all the buffered traffic messages have already been read.

In another exemplary embodiment of the method 10 according to the invention for outputting traffic information, firstly not only the vehicle position but also the direction of travel are firstly determined in step S20' as shown in Figure 4, in that, for example, a direction of travel vector, referred for short below as 15 direction of travel, is calculated from two or more successive vehicle positions. Subsequently, in step S21, the traffic message is respectively read in order to determine, in step S22', not only the distance between the route section and the current position of 20 the vehicle but also the direction with respect to this route section. In step S33, a direction factor is then determined from the direction of travel and the direction of the route section in order to calculate a local relevance, in step S34, from the distance and the 25 direction factor of each traffic message. Here, it is expediently also taken into account whether the traffic event on which the traffic message is based is significant for the current direction of travel or for the opposite direction of travel.

If, for example, a traffic event is located at 30 a route section which lies ahead in the direction of travel, the angle between the direction of travel and the direction of the route section is 0° and the traffic message is given the local relevance 1 if it 35 does not relate to the opposite direction. If a traffic event is located on a route section which lies to the side of the direction of travel, the angle between the direction of travel and the direction of route section

differs from 0 and the local relevance is calculated from the direction factor and the distance. If the angle is relatively small, for example 5° or 10°, the traffic message is assigned a relatively high
5 relevance, which is however less than 1. Here, given the same direction factor, the traffic event which lies further away is, for example, given the higher relevance because the probability of a deviation from the instantaneous direction of travel increases as the
10 distance between the position of the traffic message and the instantaneous position of the vehicle increases. If the route section is virtually at a right angle to the direction of travel, or is even located behind the current position of the vehicle, in the case
15 of a destination-oriented journey the respective traffic message is designated as being irrelevant.

The local relevance, which may, for example, be a value between 0 and 1 or even, in binary representation, an integer between 0 and 3 or 0 and 7,
20 depending on the number of bits used, is then assigned to the traffic message so that in step S35 it is possible to check whether the traffic message is relevant, that is to say whether or not the local relevance exceeds a predefined threshold of value. If the traffic message is considered to be relevant, it is
25 subsequently stored in step S23' together with the distance and the local relevance. The threshold value for the local relevance can either be defined by the user himself or expediently by the system. If the user
30 is, for example, driving in a town where he frequently changes his direction of travel, the threshold value for the local relevance can be set, for example, to 0 in order to output all the traffic messages independently of the direction, but sorted according to
35 distance and preferably also according to local relevance. If the user is on a destination-oriented journey with his vehicle, he can enter a relatively high threshold value so that traffic events occurring

near to his intended route are suppressed, like putting blinkers on the system.

If a traffic message is considered as not being relevant in step S35, the routine returns directly to 5 step S21 in order to read the next traffic message, after it has been checked in step S24 whether all the buffered traffic messages have already been read.

In step S24, it is then checked whether all the traffic messages have been read, so that they are then 10 sorted according to distance in step S25'. In step S26', the traffic messages are then output starting with the smallest distance, taking into account the local relevance factor.

Here, for example, all the traffic messages of 15 a distance range are announced or displayed depending on their relevance. It is also possible that first only the traffic messages with the respective highest relevance are output sorted according to distances, so that the traffic messages with lower relevance are then 20 also displayed or announced sorted according to distance.

Furthermore, it is finally possible that, in addition to the determination of the local relevance in steps S33, S34 and S35, the chronological relevance, as 25 has been determined and checked in steps S221 and S222, is taken into account before and after the local relevance is defined, so that the user of the traffic information system is intentionally presented only with the traffic messages which are important to him in 30 order to support him in selecting his route in an optimum way, without distracting him unnecessarily from the events on the road, as do, for example, traffic announcements by radio transmitters.

1. Method for outputting traffic information in a motor vehicle, in which

5 - traffic messages are stored together with the respective position of the route section or point to which they relate,

- the positions of the traffic messages are compared with the respective position of the motor

10 vehicle in which the traffic information is to be output in order to determine the distances between the respective positions in the traffic messages and the position of this motor vehicle, and

- the traffic messages are output sorted

15 according to distances, starting with the smallest distance.

2. Method according to Claim 1, characterized in that the sorted traffic messages are transmitted to a motor vehicle.

20 3. Method according to Claim 1, characterized in that the traffic messages are transmitted to a motor vehicle, sorted there and stored.

4. Method according to Claim 3, characterized in that the traffic messages which are transmitted to a

25 motor vehicle are continuously updated at predefinable time intervals.

5. Method according to one of Claims 1 to 4, characterized in that only traffic messages which relate to a selected area are stored and are

30 subsequently output in the motor vehicle.

6. Method according to Claim 5, characterized in that the selected area surrounds the position of the motor vehicle in an essentially circular shape.

7. Method according to Claim 5, characterized in

35 that the selected area can be defined with respect to the particular current position of the motor vehicle as a function of a planned route for a journey, surrounding it in a corridor-like fashion.

8. Method according to one of the preceding claims, characterized in that

- each traffic message is transmitted together with an item of updating information which describes
- 5 the anticipated duration of the general relevance of the respective traffic message,
- the average vehicle speed is detected, logically linked to the distances assigned to the traffic messages and compared with the updating
- 10 information in order to detect the specific relevance of the respective traffic message, and
- only traffic messages which have been assessed relevant to the respective vehicle in terms of timing are output.

15 9. Method according to Claim 8, characterized in that the updating information of the respective traffic message contains the transmission time, the anticipated duration and the detection time of the reported event.

10. Method according to one of the preceding

20 claims, characterized in that

- first the direction of travel of the motor vehicle is detected,
- the direction of the motor vehicle with respect to the particular position of the traffic message is
- 25 detected and is compared with the direction of travel, and
- the traffic messages are output sorted according to directions.

11. Method according to Claim 10, characterized in

30 that a directional factor is formed for each traffic message from the direction of the motor vehicle with respect to the particular position of the traffic message and the direction of travel, which factor is combined with the distance assigned to the respective

35 traffic message to form a local relevance factor which is taken into account during the outputting of the traffic messages.

12. Method according to Claim 11, characterized in that a traffic message is output only if its local relevance factor is higher than a predefinable threshold value.

5 13. Method according to one of the preceding claims, characterized in that the position of the motor vehicle is detected as a Geocode using a satellite-supported position-determining system, in particular with the GPS (Global Positioning System),
10 and in that the positions of the traffic messages are also provided as Geocodes, with the result that the distances can be determined without further conversion calculations.

Abstract

Method for outputting traffic information in a motor vehicle

The invention relates to a method for outputting traffic information in a motor vehicle. In order to present the driver with traffic information in such a way that he can adapt his driving behaviour and/or his selection of a route for his journey to the respective current traffic situation in time, there is a provision that traffic messages are stored together with the respective position of the route section to which they relate. The positions of the traffic messages are then compared with the respective position of a motor vehicle in which the traffic information is to be output in order to detect the distances between the respective position of the traffic messages and the position of this motor vehicle. The traffic messages are then output sorted according to distances, starting with the smallest distance.

(Figure 3)

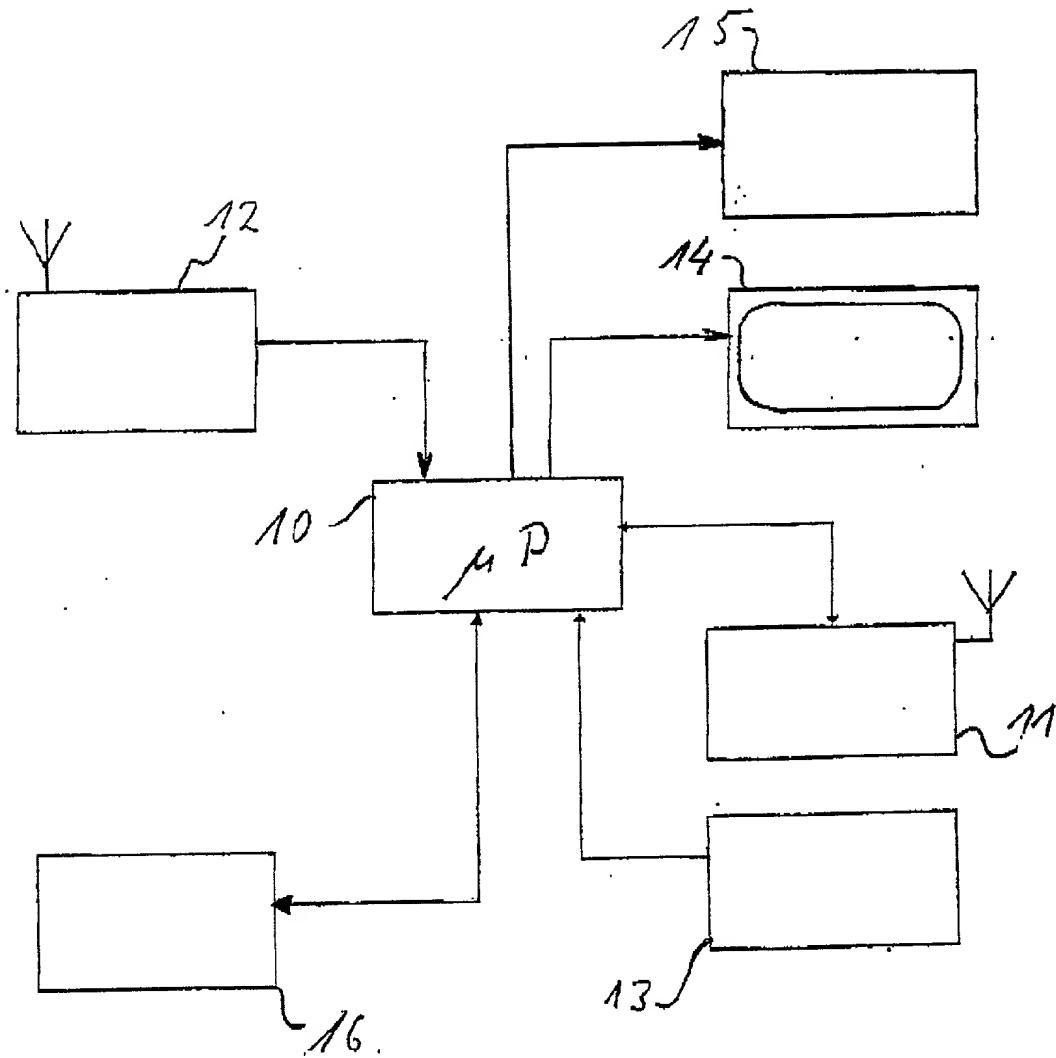


Fig.1

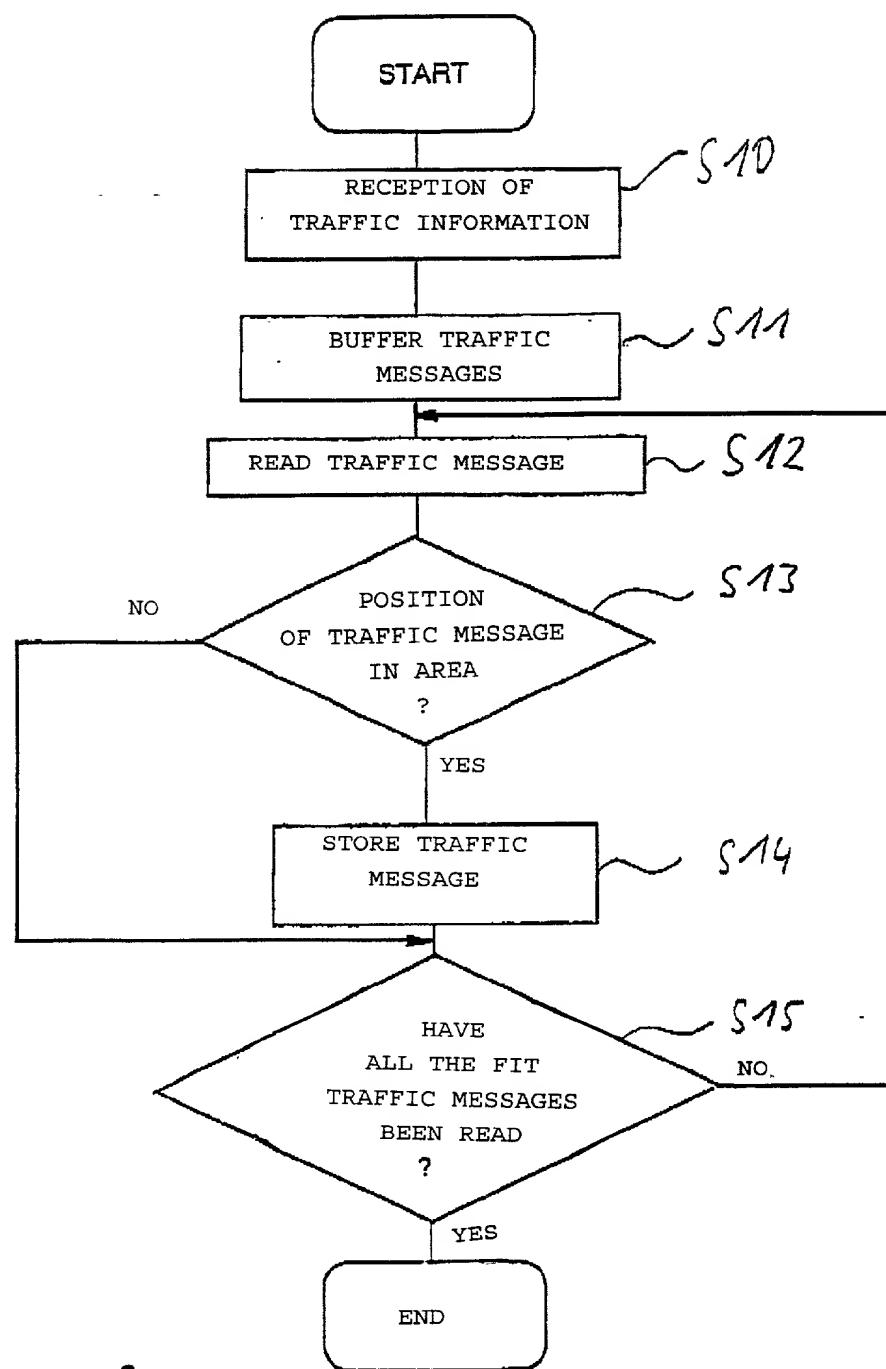


Fig.2

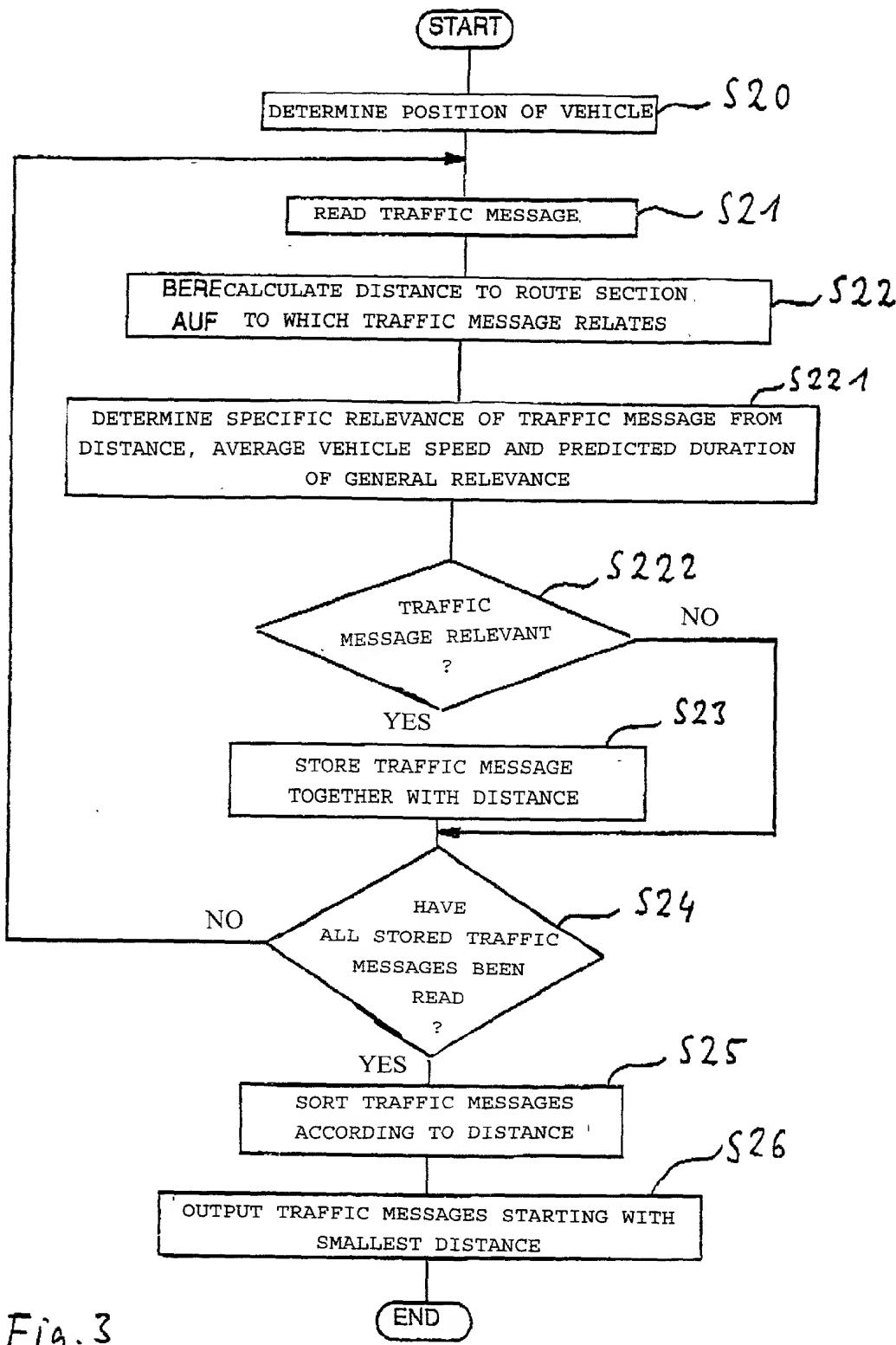


Fig. 3

